

A Guide to XENIX Documentation

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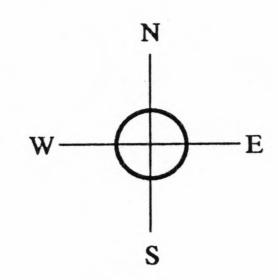
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INTRODUCTION

The documentation for a large and comprehensive operating system can sometimes take on a complexity of its own. The XENIX documentation is a complete set of over 3000 pages spanning information on hundreds of utilities, procedures, and routines. This can be a valuable resource, and the *Roadmap* is guide to using it as effectively as possible.

The Roadmap is a collection of introductory and reference material that helps you locate documentation on a command, concept, or other area of XENIX. Its purpose is both to orient the user by "mapping" the organization of the guides, and to act as a shortcut to finding information.

The first section orients the user by describing the kinds of things each guide covers. Other sections point the user to the guide appropriate to what is being sought. The user can search for information by command, or by the type of information being sought (getting started, file editing, status information, and so on).

USING THIS GUIDE

ORGANIZATION

The Roadmap has five parts:

Questions and Answers

This is a group of questions commonly asked about XENIX and its documentation.

Contents Summary

This is a "map" of what each XENIX guide covers. Major chapters are listed and contents are summarized for quick reference.

Cross Reference

This section lists the kinds of everyday tasks you can do with XENIX and in which guide or guides they can be found. This is useful when you want to do something specific, but aren't sure where to look.

Command Page Index

This section is an index to XENIX command or man pages. You look up the command name to find the page and its location.

Command/Topic Index

This section is also an index to commands. You look up a topic such as *Pattern Matching* and find the *man* page.

CONVENTIONS

Several conventions have been used in this guide. For example, the names of guides are abbreviated in text:

Release Notes	RN
Installation Guide	IG
Roadmap	RM
Introduction to XENIX	IX
User's Guide	UG
Operations Guide	OG
Text Processing Guide	TP
User's Reference	UR

When a section of a guide is noted, it follows the abbreviation for the name of the guide. For example, the *User's Reference*, which describes many XENIX commands, is divided into three sections, "C," "M," and "F."

The "C" section of the User's Reference is expressed as:

UR(C)

Commands are always shown with the section in which they are found. For example, the vi command is expressed as:

UR vi(C)

Note

The Roadmap is a guide to the user documentation listed above. However, the Command Page and Command/Topic Indexes also index the Programmer's Reference:

Programmer's Reference

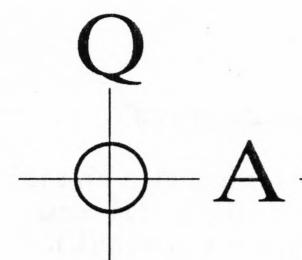
PR (CP and S sections)

As the *Roadmap* is a guide to the basic XENIX user documentation, the above programming guides are not otherwise indexed here.

PRACTICAL USE

The Roadmap is intended as both an orientation to the XENIX documentation, and as a reference guide in itself.

YOU CAN USE DIFFERENT SECTIONS TO FIND OUT	BY LOOKING IN
How the guides are organized and what each covers	Contents Summary (p. 5)
Where to look to learn how to do a specific task	Cross Reference (p. 31) Command/Topic Index (p. 38)
Where to look to find a certain command	Command Page Index (p. 56)



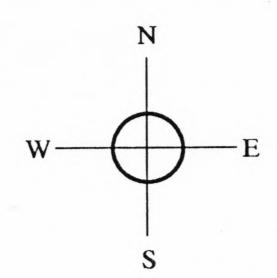
Here are some questions commonly asked about the XENIX documentation, with responses.

- Q: When should I use the command documentation (man pages) as opposed to the other documentation?
- A: The man pages are intended for reference and document commands only. Once you learn the format of man pages, they are a quick way to learn how a command works.

The rest of the documentation explains not only commands, but includes more detailed information and examples.

- Q: How do I know which group of man pages documents the commands I'm looking for?
- A: In an effort to make the large amount of XENIX command documentation more accessable, man pages have been split across three guides: The User's Reference contains user-oriented commands, The Programmer's Reference contains commands for programming, and The Text Processing Guide documents text processing commands.
- Q: I looked for documentation on spell in the *User's Reference* but couldn't find any. Where do I find out how to use this facility?
- A: spell is a text processing tool, so it is documented in the man page section (CT) of the Text Processing Guide.

- Q: What printers are supported for use with nroff?
- A: A list of nroff compatible printers is included on the nroff man page in the CT section of the Text Processing Guide. See also TP term(CT), and UR term(F).
- Q: Where can I find information on the sed and awk programs?
- A: sed and awk are facilities that allow large scale, noninteractive of very large or multiple files. They are described in Appendix A of the *Text Processing* Guide.



CONTENTS SUMMARY

This section is a quick reference to major topics in the XENIX guides.

The primary chapters of each guide are listed in an easily readable format.

Release Notes - Documents special features of a given XENIX release

Synopsis

- Notes on installation
- Compatibility of XENIX with various kinds of software and hardware
- Features of the specific release
- Notes on hardware and software
- Notes on the documentation
- Listings of the files contained in this release

Description

The Release Notes contain many useful notes, suggestions, and general information about the release of XENIX for your computer. This includes lists of the applications software that are compatible with this release of XENIX, as well as supported hardware such as computers, hard disks, and memory cards.

The Release Notes also include information about features that are new to the release of XENIX, and things that have changed from previous releases.

Finally, documentation errors are listed, plus a complete listing of the XENIX files included on your distribution media.

See Also

Installation Guide, Introduction to XENIX

Installation Guide - Installing XENIX on your computer

Synopsis

• Step by step guide to installing XENIX

• Adding peripherals such as modems, hard disks, and printers

• Using both the XENIX and DOS operating systems

Description

The Installation Guide explains how to install XENIX on your computer. The procedure is largely automated so that all you have to do is insert the media (tape or disk) containing XENIX and answer the questions that appear onscreen. The procedure takes you through installation, and creation of the super-user (administration) account and first user accounts.

Partitioning hard disk to provide more storage space for files is also discussed. This includes setting up filesystems on the disk, and arranging it so that you can use the DOS operating system in addition to XENIX.

See Also

Operations Guide, UR(C): fdisk, badtrk, fsck, su, mkuser

INSTALLATION GUIDE

INSTALLATION PROCEDURE

- First user account
- System distribution
- Installation procedure
- Super-user password

USING DOS ON THE SAME DISK

• Partitioning with fdisk

- Installation on a DOS system
- DOS accessing utilities

Introduction to XENIX - Introduces basic facilities and concepts of XENIX

Synopsis

- Demonstration of a sample XENIX session
- Introduction of basic XENIX concepts
- Performing typical tasks with XENIX

Description

The Introduction to XENIX begins by taking you through a sample XENIX session. This includes "logging in" (typing your name, password, and terminal type), how to correct simple typing mistakes, and how to give XENIX commands.

Basic concepts are then introduced, including: files and filesystems, commands, and how to direct the results of a command to a file.

Finally typical tasks for which XENIX is used are explained, including: manipulating files and directories, controlling processes, and getting status information.

All of this information is included elsewhere in greater depth, but this guide touches on many important concepts, and should be read first to get a quick idea of what you can do with XENIX.

See Also

Release Notes, Installation Guide, User's Guide, Operations Guide

INTRO TO XENIX

BASIC CONCEPTS

- Files and file systems
- Naming conventions
- Commands
- Input & output

DEMONSTRATION

• Logging in

- Logging out
- Typing commands
- Mistakes in typing

 Stopping a program

INTRO TO XENIX

Continued

TASKS

- System access
- Process control
- Calculating
- Reminder service

- Terminal setup
- Processing information
- File security
- Status information
- Moving in the file system

- Command line editing
- Communicating with other users
- Lineprinting
- System clock and calendar

User's Guide - Documents basic XENIX facilities

Synopsis

- Using the vi and ed text editors for file editing
- Using mail to send and receive messages
- Working in different command environments called shells
- Using uucp to communicate with remote systems

Description

The User's Guide explains how to use several key XENIX facilities, such as text editing and mail. You can begin using them immediately and they will become powerful tools as you learn more about them.

XENIX provides two programs for text editing: vi and ed. vi is an editor that displays a screenful of text and shows changes as they happen, hence the name vi, which stands for visual.

The ed editor is called a line editor because only the line you are editing is displayed. Though this may seem an inconvenience, you can do many things with ed that are not possible in vi.

Using *mail* you can send, receive, forward, and reply to messages. XENIX also includes a program called *uucp* that allows transfer of information to and from other computers.

XENIX uses a set of very flexible command interpreters called shells. The shell is a program that takes a user command (such as mail or vi) and passes it to the computer for action. XENIX offers several shells that are tailored to various kinds of users. All of the shells include powerful command languages that allow unusual control over how and when the commands are actually issued.

See Also

vi(UR-C), ed(UR-C), mail(UR-C), sh(UR-C), csh(UR-C), uucp(UR-C)

VI: A TEXT EDITOR

- Demonstration
- Solving problems
- Editing tasks
- Environment setup
- Commands summary

MAIL

Advanced features

- Basic concepts
- Quick reference
- Demonstration
- Commands

Passing

arguments

Continued

Special

commands

	THE SHELL	
• Basic concepts		• Shell variables
• The shell state	• Invocation	 A command's environment
• Procedure examples	• Grammar	 Shell programming

BUILDING A COMMUNICATIONS SYSTEM Installation Log inquiry System to system to system to system execution Security Command execution uucp spool directory cleanup

• Redirection

Continued

THE VISUAL SHELL

- Getting started
- Visual shell screen
- Reference

THE C-SHELL

• C-shell history

- Shell variables
- Invocation
- Expressions

- Redirection
- Aliases
- Special characters
- Built-in commands
- Command scripts

Continued

ED

Demonstration

- Tasks
- Basic concepts
- Speeding up editing

Summary of commands

- Context and regular expressions
- Editing scripts
- Cutting and pasting

Operations Guide - Provides information for the system administrator

Synopsis

• Starting and stopping the system

• Using, maintaining, and backing up filesystems

Adding new user accounts, passwords, and permissions

• Adding peripheral devices (modems, printers, and terminals)

Solving system problems

Description

The Operations Guide contains various information for the system administrator, the person who keeps the system running smoothly. This may be you, or your computer may have a designated administrator who performs tasks such as adding user accounts or extra terminals.

This guide discusses how files are maintained. Topics include: file security and how to control access through permission levels, regulating file storage space, and how to back up and copy files. Special filesystems used by XENIX are also described.

Peripheral devices, such as modems, printers, and hard disks are also discussed here. Modems are used to let your computer communicate with remote systems over telephone lines. Information on how to set up a modem is also included.

Typical problems encountered by administrators are listed and procedures and solutions are presented. These include: freeing jammed printers, stopping runaway processes, restoring free storage space, and replacing a forgotten password.

See Also

UR(C): su, passwd, pwadmin, mkfs, mount, chmod, chown, df, du, tar, sysadmin, stty, micnet

INTRODUCTION

• The system manager

- The keyboard
- The Super-user account

STARTING AND STOPPING THE SYSTEM

• Starting the system

- Stopping the system
- Logging in as super-user

Continued

MAINTAINING FILE SYSTEMS

- Maintaining free space
- File system integrity

PREPARING FOR USERS

- Adding a user account
- Forcing a new password
- Changing a user's login group

- Changing a user's password
- Creating a group
- Changing a user ID
- Removing a user account

BACKING UP FILE SYSTEMS

 Strategies for backups

- Using the sysadmin program
- Using the tar command

USING FILE SYSTEMS

• File systems

Permissions

 Managing file ownership

- System security
- Using accounting features

Continued

USING PERIPHERAL DEVICES

- Adding a terminal
- Setting the terminal type
- Changing serial lines

- terminal
- Setting terminal lines

• Removing a

- Setting serial line operation
- Adding a lineprinter

XENIX DIRECTORIES

- root •
- /lib
- /bin

- /dev
- /mnt
- /etc

- /tmp
- Logfiles
- /usr

Continued

SOLVING SYSTEM PROBLEMS

- Restoring a nonechoing terminal
- Stopping a runaway process
- Solving lineprinter problems

- Removing hidden files
- Replacing a
- Restoring free space

- Restoring lost system files
- forgotten password
- Restoring an inoperable system

• Recovering from a system crash

Changing initialization

BUILDING A MICNET NETWORK

• Planning a network

• Building a network

• Starting the network

- Testing a micnet network
- Using a uucp system

Continued

SPECIAL DEVICE FILES

• File system requirements

Special filenames

• Terminal and network requirements

- Gap and block numbers
- Block sizes

User's Reference - Reference to user level XENIX commands

Synopsis

• Lists commonly used XENIX commands in a standard XENIX format

Description

The User's Reference describes the XENIX commands most often used by the typical user. The format is standard for all commands, so once you learn it, reference is quick and efficient.

Each command (or man) page lists the name of the command, how it is used (its "syntax"), and an explanation of the syntax and usage. A section that directs you to other areas of the documentation is also standard. Finally, there is a section called "Notes" that gives special pointers about using the command.

See Also

Programmer's Reference

Text Processing Guide - Introduces XENIX text processing tools

Synopsis

- Using text editing tools: grep, diff, comm, sort, wc, cut, paste
- Using text analysis tools: spell, style, diction
- Using text processing "shortcuts:"macros
- Formatting and typesetting text: nroff/troff
- Formatting tables: tbl
- Formatting mathematics: eqn
- Using large-scale editing tools: awk, sed

Description

The Text Processing Guide introduces a powerful set of text manipulation, formatting, and analysis tools. Using some or all of these facilities in combination, you can create surprisingly professional and visually pleasing documents.

This guide summarizes facilities, introduces general formatting concepts, provides sample projects, and explains how to organize your documents so they will be prepared for formatting later.

Orientation is towards real world applications, with many common document elements described, such as: font characteristics, line and character spacing, paragraphs, headings, lists, diagrams, and tables.

A highlight of this guide is a description of a unique set of text analysis tools. Using these, you can analyze grammatical content of a document, including how hard it is to read for the average person. One facility, called *diction* even checks for redundant or cluttered language.

See Also

vi(UR-C), ed(UR-C)

WRITING AND EDITING TOOLS

- Commands for text processing
- Using style and diction
- Using spell
- Writing tools

OVERVIEW

• Basic concepts

- A sample project
- Summary
- Formatting documents

Managing writing projects

Continued

MM REFERENCE

- Invoking the macros
- Paragraphs and headings
- Displays
- References
- Memorandum and released paper styles

- Miscellaneous features
- Table of contents
- Lists
- Errors

- Formatting concepts
- Page headers and footers
- Footnotes
- Reserved names
- Summary of macros, strings, and number registers

USING THE MM MACROS

- Getting started with mm
- Basic formatting macros
- Using nroff/troff commands
- Checking mm input with mmcheck

Continued

USING NROFF/TROFF

- Inserting commands
- Tabs
- Point sizes and line spacing

- Fonts and special characters
- Strings
- Indents and line lengths

- Drawing lines and characters
- Diversions
- Titles, pages and numbering

- Number registers and arithmetic
- Diversions
- Macros with arguments

- Conditionals
- Macros
- Environments

NROFF/TROFF REFERENCE

 Basic formatting requests

- Processing control facilities
- Output and error messages
- Character translations, overstrike, and local motions

 Summary of escape sequences and number registers

Continued

FORMATTING TABLES

- Input format
- Invoking tbl
- Examples
- Command summary

EDITING WITH SED AND AWK

- Introduction
- Pattern matching with awk

• Editing with sed

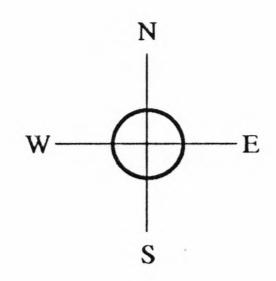
Continued

FORMATTING MATHEMATICS

- Displayed equations
- Definitions
- In-line equations

- Basic mathematic constructions
- Invoking eqn
- Complex mathematical constructions

- Layout and design of mathematical text
- Error messages
- Keywords and precedence summary



CROSS REFERENCE

This section consolidates the XENIX documentation by grouping topics in categories, such as Getting Started, Terminal Specifics, and Operations.

Then it directs you to the appropriate guide and section number covering the topic you are looking for.

GETTING STARTED

Release notes
Installation guide
System overview
System demonstration
Basic concepts
System tasks
IX3

TERMINAL SPECIFICS

• Configuring a terminal IG4 UR stty(C), OG7 • Setting terminal options • Terminal capabilities UR termcap(M) • Terminal modes UR tset(C) OG 8.2 • Restoring nonechoing terminal UG tty(C) • Terminal identification • Adding peripherals (printers, terminals) IG3 OG 7, IG 3 • Using peripheral devices

OPERATIONS

• The super user	OG 1,2
• Starting and stopping the system	OG2
• Filesystems: maintenance and backups	OG 5,6
XENIX Directories	OGB
System security	OG 4,5
 Solving system problems 	OG8
 Maintaining free space 	OG5
 Adding user accounts 	OG3

STATUS

UR du(C)
UR df(C)
UR who(C)
UR tty(C)
UR ps(C)
UR date(C)
UR finger(C)

COMMUNICATIONS

Using Mail

UG3

• Between remote computers

UG 6, UR uucp(C)

• Building a communications network

OG 9, UR micnet(M)

• Writing from one terminal to another

IX4, UR write(C)

FILES

• Conventions IX4

• Moving in the filesystem IX4, UR pwd, mv(C)

• Using file permissions IX4,UR chmod, l(C)

• Listing files IX4,UR ls, lc(C)

• Displaying file contents IX4, UR more, cat, head, tail(C)

• Deleting, creating a file IX4, UR rm(C)

• Moving, copying, naming files IX4, UR cp, mv(C)

• Finding files IX4,UR find(C)

• Editing files UG 2, UR vi(C)

• Maintaining and backing up filesystems OG 5,6

UR backup, restore, tar(C)

DIRECTORIES

 Printing your working directory 	IX4,URpwd(C)
• Listing directory contents	IX4,URlc,ls(C)
 Creating, removing 	IX4,UR mkdir, rmdir,rm(C)
 Renaming, moving 	IX4,UR mv, copy,tar(C)
 Using directory permissions 	IX4, UR chmod, l(C)
• XENIX Directories	OGB
 XENIX Special Devices 	OG A

THE SHELL

 Variables 	UG4
• Shell environment	UG4
• Shell procedures/commands	UG4
• C-shell	UG7
• Bourne shell	UG4
 Visual shell 	UG8
 Using expressions 	UG4
Shell grammer	UG4

EDITING TOOLS

• Text editors UG 2, UR vi, ed(C)

• Formatting languages TP 5,6 UR nroff, troff(C)

Macro sets
 TP3,4

• Checking spelling TP spell(CT)

• Checking style and diction TP style, diction(CT)

• Creating tables TP7, TPtbl(CT)

• Formatting mathmatical equations TP8, TPeqn(CT)

BASIC COMMANDS

• Who am I? UR who(C)

• Where am I? UR where, pwd(C)

• What day/time is it?

UR date(C)

• Changing the account password UR passwd(C)

• Listing Files/Directories UR ls(C)

• Viewing a file UR more, cat(C)

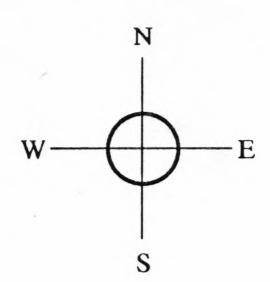
• Copying or moving a file UR cp, mv(C)

• Removing files/directories UR rm(C)

• Changing Directories UR cd(C)

• Access to the Line printer UR lpr(C)

• Print Working Directory UR pwd(C)



COMMAND/TOPIC INDEX

This section lists common XENIX topics, showing on what page, section, and guide they are to be found.

Command/Topic Index

Commands, Systems Calls, Library Routines, and File Formats

Absolute value, integer	abs (PR-S)
Absolute value, real	\dots floor(PR-S)
Accountingfile	acct(UR-F)
Accounting files, printing	acctcom(UR-C)
Accounting	\dots acct(PR-S)
Accounting, starting	accton(UR-C)
acos function	\dots trig(PR-S)
Alarm clock	\dots alarm (PR-S)
aliases.hash file	aliases (UR-M)
Allows/rejects print requests	accept(UR-C)
Archive file	cpio(UR-F)
Archive file format	ar(UR-F)
Archive file format	tar(UR-F)
Archives and libraries	ar(PR-CP)
Archives, creating and restoring	tar(UR-C)
ASCII character set	ascii(UR-M)
asctime function	ctime(PR-S)
asin function	\dots trig(PR-S)
Assembler and link editor output	a.out(UR-F)
Assembler (pre-cmerge C compiler), invokes.	asx(PR-CP)
Assembler (cmerge C compiler), invokes	masm(PR-CP)
at command	at(UR-C)
atan function	\dots trig(PR-S)
atan2 function	\dots trig(PR-S)
atoi function	\dots atof(PR-S)
atol function	\dots atof(PR-S)
atrm command	\dots at(UR-C)
Backup format	backup (UR-F)
Backup, creating and restoring	sysadmin(UR-C)
Backup, creating	\dots dump(UR-C)
Backup, dates	
Backup, listing	dumpdir(UR-C)
Backup file system, restoring	restor(UR-C)
Backup, restoring	restore (UR-C)
Binary search	bsearch(PR-S)
Block size, reports hard disk	\dots cmchk(UR-C)
Boot system automatically	autoboot(UR-M)
brk function	
C compiler	
Cflow graph generator	
Clanguage preprocessor	
Clanguage usage and syntax	Int(PR-CP)
C program, formatting	cb(PR-CP)
C program cross referencer	\dots cxref(PR-CP)

C program, determines stack requirements for	
C shell	
cabs function	F10 18 18 18 18 18 18 18 18 18 18 18 18 18
Calculator	
Calculator	
Calendar, display	
calloc function	
ceil function	
Change binary file header	fixhdr(UR-C)
Change working directory	
Character translation	
Characters, classification	
clearerr function	
Clears inode	
Clock, real time	
Clock daemon	cron(UR-C)
Clock rate, changes	
Commands, constructing and executing	
Commands, execution on a remote system	remote(UR-C)
Commands, execution priority	nice(UR-C)
Commands, execution without hangups and quits.	nohup(UR-C)
Commands, installing	install(UR-C)
Commands, options	
Commands, scheduled execution	
Communication, calling other systems	
Communication, copying files across systems	rcp(UR-C)
Compares files too large for diff	bdiff(UR-C)
Compares three versions of a file	diff3(UR-C)
Compiler compiler	yacc(PR-CP)
Compiles regular expressions	regcmp(PR-CP)
Computer screen	console(UR-M)
Configuration database, dislays and sets	cmos (UR-M)
Constant width text	
Conversion, 3-byte integers and long integers	13tol(PR-S)
Conversion of archives to random libraries	ranlib(PR-CP)
Conversion, byte swapping	
Conversion, date and time to ASCII	ctime(PR-S)
Conversion, integer and base 64 ASCII	
Conversion, ASCII to numbers	
Conversions, output	
Conversions, real to mantissa and exponent	
Conversions, to ASCII characters	
Conversions, units	
Core image file	
cos function	
cosh function	
Creates a new file or rewrites an existing one	
Customizes XENIX for user	
cwcheck command	cw(TP-CT)

Data, long integer, Accesses	sputl(PR-S)
Data segments, shared, synchronize	
Data types, system	
Database, functions	dbm(PR-S)
Date, setting	date(UR-C)
dbminit function	
deassign command	assign(UR-C)
Debugger	adb(PR-CP)
Default entries	defopen(PR-S)
Default information	default(UR-M)
defread function	defopen(PR-S)
delete function	dbm(PR-S)
/dev/kmem file	mem(UR-M)
Device, master information table	master(UR-F)
Devices, controls	ioctl(PR-S)
Devices, calls script to create	mkdev(UR-C)
Devices, exclusive control	assign(UR-C)
Devices, names	devnm(UR-C)
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Directory, comparing	dircmp(UR-C)
Directory, creating	mkdir(UR-C)
Directory, listing columns	
Directory, listing	
Directory operations	
Directory, print working	pwd(UR-C)
Directory, removing	rmdir(UR-C)
Directory, renaming	
Disk flaws, scans for flaws and creates bad track tal	
Disk partitions, maintaining	fdisk(UR-C)
Disk partition division	
Disk type	
Displaying, command arguments	
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Displaying, last lines of a file	tail(UR-C)
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Document characteristics	
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DOS cross linker.	
Dump tape	
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egrep command	_
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Environment, setting	
Environment, setup	
Environment, user	
Environment, value	
Environment, change value	
eqncheck command	eqn(TP-CT)

eqn, neqn character definitions	equenar(IP-CI)
errno variable	. perror(PR-S)
Error function	. erf(PR-S)
Error handling functions	. matherr(PR-S)
Error message file	. mkstr(PR-CP)
Error messages	. perror(PR-S)
Error numbers	. intro(PR-S)
exect function	. exec(PR-S)
execle function	. exec(PR-S)
execlp function	. exec(PR-S)
Executes command on remote XENIX	.uux(UR-C)
Execution, files	. exec(PR-S)
Execution, nonlocal "goto"	.setjmp(PR-S)
Execution, profiling	.monitor(PR-S)
Execution, shell	. system(PR-S)
Execution, time	. time(PR-CP)
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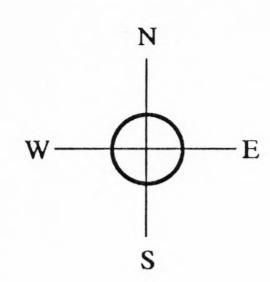
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	exec exec (PR-S)	fseek fseek (PR-S)
	execl $exec(PR-S)$	fstat stat(PR-S)
	execle <i>exec</i> (PR-S)	ftell fseek (PR-S)
	execlp $exec(PR-S)$	ftime $time(PR-S)$
1	execv <i>exec</i> (PR-S)	ftok stdipc (PR-S)
	execve exec (PR-S)	ftw $$
	execvp <i>exec</i> (PR-S)	fwrite fread (PR-S)
	exit exit (PR-S)	fxlist
	exp $exp(PR-S)$	gamma gamma (PR-S)
	explain explain (TP-CT)	gcvt ecvt(PR-S)
	expr $expr(UR-C)$	get get(PR-CP)
	fabs floor(PR-S)	
		getc getc (PR-S)
	factor factor(UR-C)	getchar getc(PR-S)
	faliases aliases (UR-M)	getcwd getcwd (PR-S)
	false false (UR-C)	getegid getuid (PR-S)
	fclose fclose (PR-S)	getenv getenv(PR-S)
	fentl fcntl(PR-S)	geteuid getuid (PR-S)
	fcvt ecvt(PR-S)	getgid getuid (PR-S)
	fd fd (UR-M)	getgrent getgrent (PR-S)
	fdisk fdisk(UR-C)	getgrgid getgrent(PR-S)
	fdopen fopen (PR-S)	getgrnam getgrent(PR-S)
	feof ferror(PR-S)	getlogin getlogin (PR-S)
	ferror ferror (PR-S)	getopt getopt (UR-C)
	fetch $dbm(PR-S)$	getopt getopt(PR-S)
	fflush fclose(PR-S)	getpass getpass(PR-S)
	fgetc getc (PR-S)	getpgrp getpid(PR-S)
	fgets gets (PR-S)	getpid getpid (PR-S)
	fgrep grep(UR-C)	getppid getpid (PR-S)
	file system file system (UR-F)	getpw getpw(PR-S)
	file file (UR-C)	getpwent getpwent (PR-S)
	fileno ferror (PR-S)	getpwnam getpwent (PR-S)
	find find (UR-C)	getpwuid getpwent(PR-S)
	finger finger (UR-C)	gets gets (PR-CP)
	firstkey	gets gets(PR-S)
	fixhdr fixhdr (UR-C)	getty getty (UR-M)
	fixperm fixperm(UR-M)	gettydefs gettydefs(UR-F)
	floor floor(PR-S)	getuid getuid (PR-S)
	fmod	getut getut(PR-S)
	fopen fopen (PR-S)	getutent getut(PR-S)
	fork fork (PR-S)	getutid getut(PR-S)
	format format(UR-C)	getutline getut(PR-S)
	fprintf printf(PR-S)	getw getc (PR-S)
	fputc putc (PR-S)	gmtime ctime(PR-S)
	fputs puts (PR-S)	grep grep (UR-C)
	fread	group group (UR-M)
	free	grpcheck group (UR-NI)
	freopen fopen (PR-S)	gsignal ssignal(PR-S)
	frexp frexp(PR-S)	haltsys haltsys (UR-C)
	fscanf scanf(PR-S)	
		hd
	fsck $fsck(UR-C)$	hd $hd(UR-M)$

hdr	ld
head	ldexp frexp(PR-S)
help	lex lex (PR-CP)
hcreate	line line (UR-C)
hdestroy hsearch (PR-S)	link link (PR-S)
hsearch (PR-S)	lint lint(PR-CP)
hyphen hyphen (TP-CT)	ln
hypot	localtime ctime (PR-S)
idid(UR-C)	lock lock(PR-S)
imprint imprint (UR-C)	lockf lockf(PR-S)
init init (UR-M)	locking locking (PR-S)
inode inode (UR-F)	$\log \ldots exp(PR-S)$
install install (UR-M)	$log 10 \dots exp(PR-S)$
intro intro (UR-C)	login login(UR-M)
intro intro (PR-CP)	logname logname (UR-C)
intro intro (TP-CT)	logname logname (PR-S)
intro intro (UR-F)	longjmp setjmp(PR-S)
intro intro (UR-M)	look look(TP-CT)
intro intro (PR-S)	lorder lorder (PR-CP)
ioctl ioctl(PR-S)	lp
ipcrm ipcrm(UR-C)	$lp \dots lp (UR-M)$
ipcs ipcs(UR-C)	lpadmin lpadmin (UR-C)
isalnum ctype (PR-S)	lpinit lpinit (UR-C)
isalpha ctype (PR-S)	lpmove lpsched (UR-C)
isascii ctype (PR-S)	$lpr \dots lp(UR-C)$
isatty ttyname (PR-S)	lrand48 drand48(PR-S)
is cntrl ctype (PR-S)	lpsched lpsched (UR-C)
is digit ctype (PR-S)	lpshut lpsched (UR-C)
isgraph ctype (PR-S)	lpstat lpstat(UR-C)
islower ctype (PR-S)	ls
isprint ctype (PR-S)	lsearch (PR-S)
ispunct ctype (PR-S)	lseek
isspace ctype (PR-S)	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
isupper ctype (PR-S)	m4
isxdigit ctype (PR-S)	machine machine (UR-M) mail mail (UR-C)
jo bessel(PR-S)	make make (PR-CP)
j1 bessel(PR-S)	maliases aliases (UR-M)
jn bessel(PR-S)	malloc malloc(PR-S)
join	man
jrand48 drand48(PR-S)	mapkey mapkey (UR-M)
keyboard keyboard (UR-M)	mapscrn mapkey (UR-M)
$kill \dots kill (UR-C)$ $kill (PR-S)$	mapstr mapkey (UR-M)
kill	masm masm (PR-CP)
kmem $mem(UR-M)$	master master(UR-F)
1	matherr matherr (PR-S)
164a	mem mem (ÙR-M)
lc	memccpy memory (PR-S)
lcong48 drand48(PR-S)	memchr memory (PR-S)
ld	memcmp memory (PR-S)
10	

	(77 0)
memcpy memory (PR-S)	opensem opensem (PR-S)
memset memory (PR-S)	pack pack(UR-C)
mamory (PR-S)	parallel parallel(UR-M)
memory memory (PR-S)	passwd passwd (UR-C)
mesg mesg(UR-C)	
messages messages (UR-M)	passwd passwd (UR-M)
micnet micnet (UR-M)	paste paste (TP-CT)
mkdir mkdir (UR-C)	pause pause (PR-S)
mkfs $mkfs$ (UR-C)	pcat pack(UR-C)
mknod mknod (UR-C)	pclose popen (PR-S)
mknod(PR-S)	perror perror(PR-S)
mknod mknod (PR-S)	pg pg pg(UR-C)
mkstr mkstr(PR-CP)	$ \begin{array}{ccc} pg & & pg & \\ pina & & pg & \\ pina & & pg & \\ pg & & \\ pg & & \\ pg & & \\ pg & & \\ pg & & \\ pg & & & \\ pg & & & \\ pg & & \\ p$
mktemp mktemp (PR-S)	$\mathbf{pipe} \dots pipe(PR-S)$
mkuser mkuser (UR-C)	plock plock (PR-S)
$mm \dots mm(TP-CT)$	popen popen (PR-S)
mmcheck checkmm(TP-CT)	pow exp(PR-S)
mmt mmt(TP-CT)	$pr \dots pr(UR-C)$
mnttab mnttab (UR-F)	prep <i>prep</i> (TP-CT)
modf frexp(PR-S)	printf printf(PR-S)
monitor (PR-S)	proctl proctl(PR-S)
monitor monitor (PR-S)	prof prof(PR_CP)
more more (UR-C)	$\mathbf{prof} \dots \mathbf{prof}(PR-CP)$
mount mount(UR-C)	profil profil(PR-S)
mount mount (PR-S)	profile profile (UR-M)
mrand48 drand48(PR-S)	prs prs(PR-CP)
msgctl msgctl(PR-S)	$ps \dots ps(UR-C)$
msgget msgget (PR-S)	pstat pstat(UR-C)
msgop msgop (PR-S)	ptrace ptrace(PR-S)
multiscreen . multiscreen (UR-M)	ptx $ptx(TP-CT)$
mv	putc putc (PR-S)
nap nap (PR-S)	putchar putc (PR-S)
nbwaitsem waitsem (PR-S)	putenv putenv (PR-S)
noback ncheck(IIR-C)	putpwent putpwent (PR-S)
ncheck ncheck(UR-C)	puts puts (PR-S)
neqn $eqn(TP-CT)$	puts puts(PR-S)
$neqn \dots neqn (TP-CT)$	pututline getut (PR-S)
netutil netutil (UR-C)	putw putc(PR-S)
newform newform (UR-C)	pwadmin pwadmin (UR-C)
newgrp newgrp(UR-C)	pwcheck pwcheck (UR-C)
news news(UR-C)	pwd pwd (UR-C)
nextkey $dbm(PR-S)$	qsort qsort(PR-S)
nice nice (UR-C)	quot quot(UR-C)
nice nice (PR-S)	rand rand (PR-S)
nl(IIR-C)	random random(UR-C)
nl	ranlib ranlib (PR-CP)
nlist $nlist(PR-S)$	ratfor (PR-CP)
$nm \dots nm(PR-CP)$	ratfor ratfor (PR-CP)
nohup nohup(UR-C)	rcp rcp (UR-C)
nrand48 drand48(PR-S)	rdchk rdchk(PR-S)
nroff nroff (TP-CT)	read read (PR-S)
null null(UR-M)	readir directory (PR-S)
od	realloc malloc(PR-S)
open open (PR-S)	red red (UR-C)
opendir directory (PR-S)	
openan anectory (110 5)	

regcmp $regex(PR-S)$	shmctl shmctl(PR-S)
regex $regex(PR-S)$	shmget shmget(PR-S)
regexp regexp(PR-S)	shmop $shmop(PR-S)$
reject accept(UR-C)	shutdn shutdn(PR-S)
remote remote (UR-C)	shutdown shutdown (UR-C)
restor restore (UR-C)	signal signal (PR-S)
restore restore (UR-C)	sigsem signat (TR-S)
rewind	$\sin \dots trig(PR-S)$
rewinddir directory (PR-S)	sinh $sinh(PR-S)$
rm	size $size(PR-CP)$
rmdel rmdel(PR-CP)	sleep
rmdir rmdir (UR-C)	sleep
rmuser rmuser(UR-C)	soelim soelim (TP-CT)
rsh	sort sort(UR-C)
runbig runbig (UR-C)	spell spell(TP-CT)
sact sact (PR-CP)	spline spline (PR-CP)
sbrk	split split (UR-C)
scanf scanf(PR-S)	sprintf printf(PR-S)
sccsdiff sccsdiff (PR-CP)	sputl sputl(PR-S)
sccsfile sccsfile (UR-F)	$sqrt \dots exp(PR-S)$
sddate sddate (UR-C)	srand rand (PR-S)
sdenter sdenter (PR-S)	srand48 drand48(PR-S)
sdleave sdenter (PR-S)	sscanf scanf(PR-S)
sdget sdget (PR-S)	ssignal ssignal(PR-S)
sdgetv sdgetv (PR-S)	stackuse stackuse (PR-CP)
sdiff sdiff (UR-C)	stat stat(UR-F)
sdleave sdenter (PR-S)	stat stat(PR-S)
sdwaitv sdgetv(PR-S)	stdio stdio (PR-S)
sed sed(UR-C)	stdipc stdipc (PR-S)
seed48 drand48(PR-S)	stime stime (PR-S)
seekdir directory (PR-S)	store $dbm(PR-S)$
semctl semctl(PR-S)	streat string(PR-S)
semget semget (PR-S)	strchr string(PR-S)
semop semop (PR-S)	strcmp string (PR-S)
serial serial (UR-M)	strcpy string (PR-S)
setbuf setbuf(PR-S)	strcspn string (PR-S)
setclock setclock (UR-M)	strdup string (PR-S)
setcolor setcolor(UR-C)	string string (PR-S)
setgid setuid (PR-S)	strings strings (PR-CP)
setgrent getgrent (PR-S)	strip strip (PR-CP)
setjmp setjmp (PR-S)	strlen string (PR-S)
setkey setkey (UR-M)	strncat string(PR-S)
setmnt setmnt(UR-C)	strncmp string(PR-S)
setpgrp setpgrp (PR-S)	strncpy string(PR-S)
setpwent getpwent (PR-S)	strpbrk string(PR-S)
settime settime (UR-C)	strrchr string(PR-S)
setuid setuid (PR-S)	strspn string(PR-S)
setutent getut (PR-S)	strtod strtod (PR-S)
sgetl sputl(PR-S)	strtol strtol(PR-S)
sh	strtok string (PR-S)

/*** C)	
stty stty (UR-C)	true true (UR-C)
style style (TP-CT)	tsearch tsearch (PR-S)
su su(UR-C)	tset tset(UR-C)
sulogin accton (UR-C)	tsort tsort(PR-CP)
sum sum(UR-C)	tty tty (UR-C)
swab swab (PR-S)	tty tty (UR-M)
sync sync (UR-C)	ttyname ttyname (PR-S)
sync $sync(PR-S)$	ttys ttys(UR-M)
sys_errlist perror(PR-S)	ttyslot ttyslot(PR-S)
sys_nerr perror(PR-S)	twalk tsearch (PR-S)
sysadmin sysadmin(UR-C)	/ (
system system(PR-S)	types $types(UR-F)$
	tz $tz(UR-M)$
systemid systemid (UR-M)	tzset ctime(PR-S)
tail tail(UR-C)	ulimit
tan $trig(PR-S)$	umask umask (UR-C)
tanh sinh (PR-S)	umask umask (PR-S)
tar $tar(UR-C)$	umount umount (UR-C)
tar tar(UR-F)	umount umount (PR-S)
tbl <i>tbl</i> (TP-CT)	uname uname (UR-C)
tdelete tsearch (PR-S)	uname uname (PR-S)
tee tee(UR-C)	unget unget (PR-CP)
telldir directory (PR-S)	ungetc ungetc (PR-S)
term $term(UR-F)$	uniq uniq (UR-C)
term term(TP-CT)	units units (UR-C)
termcap termcap (UR-M)	unlink unlink (PR-S)
termcap termcap (PR-S)	unpack pack (UR-C)
terminals terminals (UR-M)	ustatustat(PR-S)
termio termio (UR-M)	utime utime (PR-S)
test test (UR-C)	utmp $utmp(\hat{U}R-M)$
tfind tsearch (PR-S)	utmpname getut (PR-S)
tgetent termcap (PR-S)	uuclean uuclean (UR-C)
tgetflag termcap(PR-S)	uucp uucp (UR-C)
tgetnum termcap(PR-S)	uuinstall uuinstall (UR-C)
tgetstr termcap(PR-S)	uuloguucp(UR-C)
tgoto termcap (PR-S)	uuname uucp(UR-C)
time time (PR-CP)	uustat uustat (UR-C)
time time (PR-S)	uusub
times times (PR-S)	uuto
	·
tmpfile tmpfile (PR-S)	uupick uuto (UR-C)
tmpnam tmpnam(PR-S)	$uux \dots uux(UR-C)$
toascii	val $val(UR-C)$
tolower conv(PR-S)	valval(PR-CP)
top top (UR-M)	vi
top.next top(UR-M)	view
touch touch (UR-C)	vprintf vprintf(PR-S)
toupper conv(PR-S)	vfprintf vprintf(PR-S)
tputs termcap(PR-S)	vsprintfvprintf(PR-S)
tr $tr(UR-C)$	vsh vsh (UR-C)
trig $trig(PR-S)$	wait wait (UR-C)
troff troff(TP-CT)	wait wait(PR-S)

	waitsem waitsem (PR-S)	
	wall wall (UR-C)	
	wc	
	what	
	who	
	whodo whodo (UR-C)	
	write write (UR-C)	
	write write (PR-S)	
	wtmp utmp(UR-M)	
16-89-	xargs xargs(UR-C)	
	xlist xlist (PR-S)	
	xref xref(PR-CP)	
	xstr xstr (PR-CP)	
	y0 bessel(PR-S)	
	y1 bessel(PR-S)	
	yacc yacc (PR-CP)	
	yes yes(UR-C)	
	yn bessel(PR-S)	

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